

legs subcompressed (section oval), smooth, the lower edge with a row of minute denticles directed forwards; third joint of the first pair nearly 4 lines wide, gradually decreasing to the fifth pair, the third joints of which are about 1 line wide.

Very abundant in the fine Fuller's earth of the "Lobster beds" of the lower greensand of Atherfield, Isle of Wight; also in the Specton clay of Specton, Yorkshire coast.

(Col. University of Cambridge.)

*Note.*—As the *Glyphæa rostrata* (Phil. sp.) (*Astacus rostratus*, id., Geol. York) has been referred by Herman von Meyer (Neue Gattungen fos. Krebse) and subsequent authors to the *G. Münsteri*, I may mention, that on comparing an authentic cast of that species with the English one, I find the latter fully distinguished, as a species, by the hind part of the thorax being much longer in proportion to the depth, even slightly exceeding in this respect the *G. pustulosa* (V. Mey.), which it exactly resembles in the character of its branchial furrows and their associated lobes, differing however from it and agreeing with the *G. Münsteri* in the abrupt notch-like narrowing of the margin in front of the nuchal furrow.

[To be continued.]

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XXXV. — *Supplementary Notices regarding the Dodo and its Kindred*. Nos. 6, 7, 8. By H. E. STRICKLAND, M.A., F.G.S.

[Continued from vol. iii. p. 261.]

6. *On two additional bones of the Solitaire recently brought from Mauritius.*—We are indebted to the officers of the Royal Society of Arts and Sciences of Mauritius for a valuable contribution to Didine osteology. These gentlemen no sooner heard of the interest which the history of the Dodo had excited in Europe, than they undertook to search in Mauritius and the adjacent islands for such parts of the skeleton of these extinct birds as were wanting to complete our knowledge. Before proceeding to excavate the alluvions and caverns of those islands in quest of bones, they wisely commenced by searching the cabinets of their own museum. Two bones were here discovered, which tradition referred to the Dodo, and these precious specimens the Society, with the most praiseworthy liberality, have sent to Europe.

The bones now sent belong, not to the true Dodo, as was supposed by the Mauritian naturalists, but to that longer-legged species which inhabited the island of Rodriguez, and was denominated the Solitaire. They are both metatarsal bones, and consequently are so far only duplicates of portions of that bird which already existed in Europe. But from their superior state of preservation they supply some valuable information which was

previously unattainable. The three metatarsal bones of the Solitaire figured in the 'Dodo and its Kindred' (plate 15. f. 2, 3, 4) are all more or less defective, one being incrustated with stalagmite, the other two much decayed and broken. The two additional bones now referred to supply in great measure these defects. One of them indeed is incrustated with stalagmite, and is evidently part of the same individual as the similarly incrustated bones in the Paris Museum which are figured in plates 13, 14 and 15. This is evident, not only from comparison with its fellow bone (pl. 15. f. 3), but from the following label attached to it by Prof. Bojer, Curator of the Mauritius Museum:—"Tarsus of the Dronte, being a remaining fragment of a more perfect skeleton sent by M. Julien Desjardins to the Baron G. Cuvier. The said skeleton was found in a cave at the island Rodrigue by M. Roquefeuille, inhabitant of Mauritius."

The second metatarsal now sent is a remarkably perfect bone, the only defective portion being the posterior surface of the ecto-calcaneal process. Being wholly free from stalagmite, and possessing its articular extremities uninjured, it enables us to make many comparisons and measurements which were previously impracticable. This specimen was ticketed by M. Bojer—"Tarsus of a bird, presumed to be a tarsus of the Dronte, discovered by Col. Dawkins in the same cave as No. 1, in 1831."

This bone, though apparently belonging to an adult individual, is considerably smaller in its dimensions than any metatarsi of the Solitaire which have been previously examined. In fact, it is only half an inch longer than the same bone in the Oxford specimen of the Dodo. But notwithstanding the smaller size, it so precisely corresponds in form and proportions with the figured examples of the Solitaire's metatarsus as to leave not the slightest doubt that they all belong to one and the same species. The difference of size is not greater than is often seen to arise from diversity of sex, age, or development, in other species of birds. The following are its precise measurements:—

*Right Metatarsus of Solitaire.*

|   | in. | lin. |
|---|-----|------|
| Length from lower border of middle trochlea to summit of intercondyloid tubercle .....                    | 5   | 8    |
| Transverse diameter of the shaft .....  | 0   | 6    |
| Antero-posterior diameter of do. at the upper portion of articular surface for posterior metatarsal ..... | 0   | 4    |
| Transverse diameter of lower extremity .....  | 1   | 3½   |
| Distance from upper border of posterior metatarsal articular facet to internal intertrochlear notch ..... | 1   | 3    |
| Length from external trochlea to external condyloid fossa .....   | 5   | 1½   |
| „ from internal do. to internal do. ....  | 5   | 2½   |
| Breadth of upper extremity .....  | 1   | 2    |
| Antero-posterior diameter of do. ....   | 1   | 1    |
| Projection of ento-calcaneal process .....  | 0   | 5½   |

The length of this bone being so nearly that of the Dodo's metatarsus, we are enabled to see at a glance those great differences in its shape and proportions, which seem to justify us in asserting the Solitaire to have been generically, as well as specifically, distinct from the Dodo. The shaft of the bone is longer, both absolutely and proportionally, more slender, and less expanded at both extremities; all which characters are indicative of greater speed and activity. There are also several minor distinctions which Dr. Melville has pointed out (Dodo and its Kindred, p. 117), and which are beautifully exhibited in the specimen before us. Yet notwithstanding these distinctions, there is no disputing the very close affinity between the two birds to which these osseous fragments belong. The metatarsi of the Dodo and of the Solitaire are both distinguished by the expansion of the trochlear extremity, the elongation of the internal trochlea, the form and development of the calcaneal processes and of the buttress or ridge connected with them, with other characters indicative of near affinity.

The characters alluded to moreover confirm in the strongest manner the affinity of both these birds to the *Columbidæ* or Pigeons. If the bone before us were now discovered for the first time, no comparative anatomist could hesitate in pronouncing it to belong to a gigantic species of Pigeon. I need not repeat the arguments which we have already adduced on this head, but will merely point out the single character, peculiar to the Pigeons and to the allied group of *Pterocles*, that the calcaneal canal which transmits the tendons of the *flexor perforans digitorum*, passes on the *outside* of the posterior ridge or buttress, whereas in Gallinaceous and other birds it passes on the *inside* of that ridge.

7. *Dr. Cabot's views of Dodo-affinity identical with our own.*— I gladly take this opportunity of doing justice to a short but able article by Dr. Cabot, published at the commencement of 1848 in the 'Boston Journal of Natural History,' vol. v. p. 490. This paper has only lately come into my hands, and it is hardly necessary to add, that Dr. Cabot's conclusions as to the affinities of the Dodo were arrived at quite independently of those simultaneously deduced by Dr. Melville and myself in this country. Under these circumstances it is gratifying to find that Dr. Cabot, although the data on which he reasoned were far less complete than our own, having only seen casts of the external parts of the Dodo's head and foot, has arrived at precisely the same conclusion as ourselves, viz. that "The Dodo was a gigantic Pigeon," and that it most nearly approached the genus *Treron* (*Vinago*). If the coherence of independent witnesses be any test of truth, we could hardly have had a stronger confirmation of the sound-

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ness of our views as to the affinities of the Dodo and its kindred than is afforded by Dr. Cabot's brief and unpretending memoir. Prof. Brandt of Petersburg, in a paper published in the 'Verhandlungen der Russisch-kaiserlichen Mineralogischen Gesellschaft,' 1848, p. 201, still maintains the affinity of the Dodo to the Plovers, but with this exception I believe that all naturalists who have studied the subject are now disposed to regard the Columbine characters of the Dodo as predominating over all others.

8. *Supposed existence of a gigantic Bird in Madagascar.*—I have received, through the kindness of F. R. Surtees, Esq., Her Majesty's Commissioner of Arbitration at the Cape of Good Hope, the following curious statement, which I insert here, as it *may* have some bearing on the subject of the Dodo or of its kindred. I have already alluded in our published work, p. 60, to the probable existence of some large brevipennate bird in Madagascar, and though it has escaped the search of modern naturalists, yet we have the positive testimony of Flacourt that such a bird was known in the island two centuries ago. It would therefore be unwise summarily to reject a story which, however marvellous, may rest on a substratum of truth, and may lead to the discovery of important and valuable facts.

It appears from the information collected and communicated by Mr. Surtees, that in Oct. 1848, when H.M.S. Geyser was cruising off St. Augustine's Bay, Madagascar, a French gentleman named Dumarele, who was a passenger on board, gave the following account, which is extracted from the private journal of Mr. John Joliffe, Surgeon of the Geyser:—"After giving an account of some curious monkeys with white shining silvery hair, M. Dumarele casually mentioned that some time previously, when in command of his own vessel trading along the coasts of Madagascar, he saw at Port Leven, on the north-west end of the island, the shell of an enormous egg, the production of an unknown bird inhabiting the wilds of the country, which held the almost incredible quantity of *thirteen wine quart bottles of fluid!!!*, he having himself carefully measured the quantity. It was of the colour and appearance of an ostrich egg, and the substance of the shell was about the thickness of a Spanish dollar, and very hard in texture. It was brought on board by the natives (the race of 'Sakalavas') to be filled with rum, having a tolerably large hole at one end, through which the contents of the egg had been extracted, and which served as the mouth of the vessel. M. Dumarele offered to purchase the egg from the natives, but they declined selling it, stating that it belonged to their chief, and that they could not dispose of it without his

permission. The natives said the egg was found in the jungle, and observed that such eggs were *very very rarely* met with, and that the bird which produces them is still more rarely seen."

The value of such a statement of course depends on the character of the narrator, and on this head Mr. Joliffe observes—"M. Dumarele is a French merchant of Bourbon, a very respectable gentlemanly man, about sixty years of age, who has for years been trading with his own vessels along the coasts of Madagascar, and is well-acquainted with the different races of natives and with the resources of the country. His very unassuming and quiet manner, and intelligent conversation, much prepossessed us in his favour, and we believed everything he told us to be worthy of credit as far as his judgement and good intention went."

Mr. Joliffe's own opinion seems to be, that M. Dumarele was imposed upon in some way by the roguery of the natives. He judiciously adds however—"M. Dumarele's story should not be despised or discredited in these times, when such extraordinary discoveries are constantly made in every branch of science, but publicity should be given to his statement, that persons visiting Madagascar may, if possible, collect fresh information on the subject, and clear up the mystery. The sight of one sound egg would be worth a thousand theories."

It is a singular circumstance, if nothing more, that Marco Polo refers the *Roc*, of Arabian-Night celebrity, to the island of Madagascar; but as the *Roc*, however gigantic, was decidedly not *brevipennate*, a discussion of its history would be irrelevant to our present subject.

XXXVI.—*Reports on the Progress of Physiological Botany.*

No. 5. By ARTHUR HENFREY, F.L.S. &c.

*On the Phænomena accompanying the Germination of the Spores of Ferns.*

IN the year 1842, Nägeli discovered on the pro-embryo (the cellular expansion fruit produced from the spore in germination) of Ferns, peculiar organs which he considered to be analogous to the antheridia of the other Cryptogamic plants.

In the account he published of these structures\* he describes them as gland-like organs growing on the under surface, near the margin, very rarely upon the upper surface. They frequently appear as if composed of a single cell; but it may mostly be

\* *Bewegliche Spiral-faden (Saamenfaden?) an Farren; Schleiden und Nägeli's Zeitschr. für Wiss. Botanik, Heft i. 168. Zürich, 1844.*